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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/190,208	11/13/1998	JIASHU CHEN	CHEN3-1	6397

7590 05/09/2002

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EXAMINER
LAO, LUN S

ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 05/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/190,208	CHEN ET AL.	
	Examiner	Art Unit	
	Lun-See Lao	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 1998* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *07 October 1999* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Introduction

1. Claims 1-14 of U.S. application 09/190,208 filed on 11/12/98 are presented for examination.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Regarding claim1, the phrase "of any" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims1-3, 6, are rejected under 35 U.S.C. 102(b) as being anticipated by Matsumoto et al (US PAT.5, 381,482).

Regarding claim 1 Mataumoto teaches that a digital delay line for use in a 3D audio sound system, comprising:

a first delay module (see fig.#40 and col.9, line27-30) providing a choice of any delay within a first resolution (see fig.4); as to the choice of any delay with a first resolution, the choice of 20 ms is obviously an example of the delay values (see col.9

line 28) and other values could also have been chosen in Mastumoto's delay device (see fig.4 #40).

a second delay module (see fig.4 #32,33) in series with said first delay module, said second delay module providing a choice (0.7ms) of any of a plurality of additional fractional delays (0.7ms), each of said additional fractional delays being less than said first resolution (0.7<20ms) (see fig.4 and col.9 line 15-col.- col.10 line 55).

Regarding claims 2-3, Matsumoto discloses that the digital delay line for use in a 3D audio sound system includes first delay module a first-in, first out buffer (see fig.2), and has a choice of any one of a plurality of polyphase filters (see fig.4 #11,14), each of said polyphase filters providing an additional fraction delay less than said first resolution (0.7<20ms) (see fig.4 and col.9 line 15-col.- col.10 line 55).

Regarding claim 6, Matsumoto teaches that the digital delay line for use in a 3D audio sound system includes first resolution is based on a sampling rate of a digital audio signal (see fig.3a and col.7 lines 45-68).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (US PAT. 5,381,482) in view of Cashion et al (US PAT. 5,809,149).

Regarding claim 4, Matsumoto fails to teach that interaural time delay look-up table.

However, Cashion teaches that the digital delay line for use in a 3D audio sound system includes a localization control module comprising an interaural time delay look-up table (see fig.2a #36) associating desired sound source locations with a particular interaural time delay (see col.3 line 25-col.5 line30).

Therefore, It would have obvious to one of ordinary skill in the art the time the invention was made, would have been motivated to combine the teaching of Matsumoto and Cashion to achieve an interaural time delay look-up table to provide the apparent sound location of a sound signal, as perceived by a person listening to the sound signals over headphone which can be accurately positioned.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mastumoto (US PAT 5,381,482) and Cashion (US PAT 5,809,149) as applied to claims 1,4 above, and further in view of Platt (US PAT. 5,337,363).

Matsumoto and Cashion fails to teach that the digital delay line for use in a 3D audio sound system of localization control module further comprises: an integer and fractional delay selector adapted to determine a first time delay for use by said first delay module and said additional fractional delay for use by said second delay module.

However, Patt teaches that the digital delay line for use in a 3D audio sound system of localization control module further comprises: an integer and fractional delay (see fig.2) selector adapted to determine a first time delay for use by said first delay

module and said additional fractional delay for use by said second delay module (see col.7 line 10-col.9 line20).

Therefore, It would have obvious to one of ordinary skill in the art the time the invention was made, would have been motivated to combine the teaching of Matsumoto; Cashion and Platt to achieve a 3D audio sound system to provide the better digital samples for sound.

9. Claim7-8, 9-14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Myers (US PAT. 4,817,149) in view Matsumoto (US PAT. 5,381,482).

Regarding claim 11, Myers teaches that apparatus for providing an interaural time delay in a digital 3D sound system, comprising: means for selecting one of a plurality of available first time delays (finite impulse response filters)(see fig.7 f1 and f2) having a first resolution between each of said plurality of available first time delays; means for additionally selecting one of a plurality of available second time delays (see fig.7 #104,106), and means for adding said selected first time delay and said second time delay to provide a desired interaural time delay (see fig.7 and col.11 lines 20-40).

However, Myers fails to teach that each of plurality of available second time delays being less than said first resolution.

On the other hand, Matsumoto teaches that apparatus for providing an interaural time delay in a digital 3D sound system, comprising each of plurality of available second time delays (see fig.4 #32,33) being less than said first resolution (see fig.4 #40 and col.9 line 25-col.10 line 20).

Therefore, It would have obvious to one of ordinary skill in the art the time the invention was made, would have been motivated to combine the teaching of Myers and Matsumoto to achieve a three-dimension auditory display system to provide a quality digital audio signal in the interaural time delay system.

As to claim 7, there is a method claim of claims 11 respectively. Thus note claim 11, respectively for rejection.

Regarding claim 12, Myers teaches that the apparatus for providing an interaural time delay in a digital 3D sound system desired interaural time delay relates to a desired interaural time delay for one ear of a listener (seefig.20 #146); and said first time delay relates to a desired interaural time delay for a second ear of said listener (see fig.20 #148 and col.13 line 35-col.14 line 26).

As to claim 8, there is method claim of claims 12 respectively. Thus note claim 8 respectively rejection.

Regarding claim 14, Myers teaches that the apparatus for providing an interaural time delay in a digital 3D sound system comprises:

means for fixing a first interaural time delay (finite impulse response filter)(see fig.7 F1 and F2) with respect to a first ear of a listener (see fig.7 #112); and

means for providing said -desired interaural time delay (see fig.#106,108) with respect to a second ear of said listener (see fig.7 #114).

As to claim 10, there is the method claim of claims 14 respectively. Thus note claim 10, respectively rejection.

Regarding claims 9,13, Myers fails to teach that the apparatus for providing an interaural time delay in a digital 3D sound system includes the plurality of available time delays are based on a sampling rate of a digital audio signal.

However, Matsumoto teaches that the apparatus for providing an interaural time delay in a digital 3D sound system is comprising the said plurality of available time delays are based on a sampling rate of a digital audio signal (see fig.4 #21 and col.col.9 20-col.10 line40).

Therefore, It would have obvious to one of ordinary skill in the art the time the invention was made, would have been motivated to combine the teaching of Myers and Matsumoto to achieve a three-dimension auditory display system to provide the reproduced sound can be heard more naturally as sound coming from a location other than the location of the speaker located only at frond.

As to claim 9, there is the method claim of claims 13 respectively. Thus note claim 9, respectively for rejection.

Conclusion

10. The prior art made of record and not relied upon is considered to applicant's disclosure. Kamada (US PAT. 5,995,631) is recited to show other related the method and apparatus for processing interaural time delay in 3d digital audio.

11. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington.

VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259 The examiner can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao,Lun-See
Patent Examiner
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DUC NGUYEN
PRIMARY EXAMINER